

Commonwealth of Kentucky
Division for Air Quality
RESPONSE TO COMMENTS

Title V Draft Permit, No. V-03-054
Tennessee Valley Authority-Shawnee Fossil Plant
7900 Metropolis Lake Road, West Paducah, Ky
January 15, 2004
HERBERT CAMPBELL
PLANT I.D. 21-145-00006
APPLICATION LOG # 50078/E885

SOURCE DESCRIPTION:

The source is an electric power generating plant that has ten coal-fired boilers, two 10 mmBtu/hour oil-fired boilers, and coal, limestone and ash handling facilities. Nine boilers are pulverized-coal, dry bottom wall-fired units rated at 1691 mmBtu/hour, each with cyclones and bagfilters. One boiler is a fluidized-bed combustor, coal-fired, bubbling-bed, fly ash reinjection unit rated at 1800 mmBtu/hour with cyclone and bagfilter.

- E. Unit 01-09: Pulverized coal-fired, dry bottom, wall fired unit equipped with bagfilters and cyclones constructed before 1953. Bagfilters installed in 1981.
- E. Unit 10: Fluidized-bed combustor, coal-fired, bubbling-bed, fly ash reinjection unit equipped with bagfilters and cyclones construction commenced in 1988.
- E. Unit 11: Two 10 mmBTU/hour oil-fired boilers (2 Heating boilers, HB1-HB2) construction commenced in 1971.
- E. Unit 12: Coal handling operations includes: AFBC fuel prep, AFBC coal conveyor transfer point (BC-13 to BC-14), and AFBC coal bunker and conveyor BC-14 Discharge. All of the effected facilities equipped with bagfilter. Construction commenced: 1988
- E. Unit 13A: Equipment includes: Screening and Crushing Building & Facilities; Rotary and/or Bottom Dump to Hopper at Railcar Unloader; Hopper Discharge to Conveyor BC-1; Discharge from Conveyor BC-3 and BC-4 to Conveyor BC-6, BC-7, or BC-13; Discharge from Trippers 1&2 to Bunkers; Discharge from Conveyor BC-5 to Yard Conveyor or Auxiliary Stockout Conveyor; Discharge from Yard Conveyor to Elevating Conveyor; Discharge from Elevating Conveyor to Boom Conveyor; Discharge from Boom Conveyor to Coal Storage Yard. Controls: Enclosures and Foam Suppression Carryover. Construction commenced: 1989, 1998 & 2000.
- E. Unit 13B: Equipment includes: Coal Storage Yard Construction commenced: 1998.
- E. Unit 14: Limestone handling and processing includes: Limestone conditioner building, limestone recycle conveyor (BC-L-3) transfer to BC-L-2, and limestone products conveyor & bunker. Bagfilter or foam are used as control system. Construction commenced: 1988.
- E. Unit 15: Limestone handling and processing includes: Limestone unloading, limestone stockout conveyor (BC-L-1) discharge, limestone storage yard, limestone reclaim conveyor (BC-L-2) & emergency feeder, and limestone recycle dump. Enclosure, foam and watering are used as control system. Construction commenced: 1988

- E. Unit 16: Fly ash handling includes: includes: Fly ash mechanical collector vacuum systems (Boiler units 1-2, 3-4, 5-6,7-8, and 9), two fly ash transfer silos , two fly ash disposal silos, conditioned fly ash unloading, dry fly ash & AFBC char/fly ash unloading, AFBC char/fly ash disposal silo, conditioned AFBC char/fly ash unloading, AFBC spent bed material (SBM) disposal silo, conditioned AFBC SBM unloading, and dry AFBC SBM and char/fly ash unloading. All of the effected facilities equipped with bagfilter. Reconstruction commenced 1988.
- E. Unit 17: Fly ash handling includes: Fly ash, char/fly ash, SBM, dirt hauling and consolidated waste dry stack pile. Watering and enclosure are used as control system. Reconstruction commenced 1988.

PUBLIC AND U.S. EPA REVIEW:

On April 7, 2004, the public notice on availability of the draft permit and supporting material for comments by persons affected by the plant was published in *The Paducah Sun* in Paducah, Kentucky. The public comment period expired 30 days from the date of publication. Comments were received from Tennessee Valley Authority on May 7, 2004. Attachment A to this document lists the comments received and the Division's response to each comment. Minor changes were made to the permit as a result of the comments received, however, in no case were any emissions standards, or any monitoring, recordkeeping or reporting requirements relaxed. Please see Attachment A for a detailed explanation of the changes made to the permit. The U.S. EPA has 45 days to comment on this proposed permit. If no comments are received from U.S. EPA during this period, the proposed permit shall become the final permit.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.

ATTACHMENT A

Response to Comments

TENNESSEE VALLEY AUTHORITY (TVA) – SHAWNEE FOSSIL PLANT (SHF) –
COMMENTS ON DRAFT TITLE V PERMIT NUMBER V-03-054
by J. Thomas Waddell of TVA.

PERMIT APPLICATION SUMMARY FORM

1. Miscellaneous—The Shawnee Fossil Plant is not currently subject to Section 112(r), because the facility does not store or handle chemicals regulated under that provision in threshold quantities.

Division's response: Comment acknowledged, change made.

2. Emissions Summary—Add a note that this summary is for Units 01-10 only. Make the following corrections to “Maximum (tpy) uncontrolled”:

- PM – 813,670
- PM₁₀ – 187,144
- SO₂ – 145,715

Division's response: Comment acknowledged, changes made.

PERMIT STATEMENT OF BASIS

1. The street address is misspelled. Change “Metropolis Lack Road” to “Metropolis *Lake* Road.”

Division's response: Comment acknowledged, change made.

2. Source Description, Control Equipments [sic] & Construction Date:

- E. Unit 01-09: Bagfilters installed in 1979-1981.
- E. Unit 11: These boilers were built in 1953.
- E. Unit 13: Delete this unit and replace it with Emission Units 13A and 13B (see p. 4 of our comments).

Division's response: Comment acknowledged, changes made.

3. Regulation Applicability:

- Delete Emission Unit 13 and replace it with Emission Units 13A and 13B (see p. 4 of our comments).
- Add “14” after Emissions Unit in the next line.

Division's response: Comment acknowledged, changes made.

DRAFT PERMIT

SECTION B

Emission Units 01-09

1. Description (p. 2)

- Maximum continuous rating should be changed to *1,691 MMBtu/hr*, as submitted on form DEP7007A in the permit application.

Division's response: Comment acknowledged, changes made.

- The bagfilters for these units were installed *from 1979 through 1981*.

Division's response: Comment acknowledged, changes made.

- Secondary fuels in addition to No. 2 fuel oil include wood waste, used oil with less than 50 ppm PCBs, nonhazardous solvents, and oil-contaminated materials/rags, as submitted on form DEP7007A in the permit application.

Division's response: Comment acknowledged, changes made.

2. Applicable Regulations

- Emission Limitations, 2.b (p. 2)—Revise to read: “Pursuant to 401 KAR 61:015, Section 4 (2), *and 401 KAR 50:055*, emissions shall not exceed twenty (20) percent opacity based on a 6-minute average, *except: (1) a maximum of forty (40) percent opacity shall be permissible for not more than one (1) 6-minute period in any sixty (60) consecutive minutes; (2) during building a new fire for the period required to bring the boiler up to operating conditions; and (3) during periods of malfunction, shutdown and startup.*”
- *Division's response: Comment acknowledged, 401KAR 50:055 is a compliance requirement and cannot be used under specific opacity requirements. Other changes except (3) during periods of malfunction, shutdown and startup made.*
- Emission Limitations, 2.c (p. 2)—Revise to read: “... sulfur dioxide emissions shall not exceed 1.2 lbs/MMBtu *based on a 24-hour average.*”

Division's response: Comment acknowledged, change made.

- Testing Requirements, 3.a (p. 2)—Delete the last sentence of Condition 3.a. TVA will propose an alternate method of determining continuous compliance. Also, add the following sentence: “*The performance tests shall be conducted on the common stack for Units 01-05, the common stack for Units 06-10, and the main baghouse outlet for Unit 10.*”

Division's response: Comment acknowledged, added the following sentence: “The performance tests shall be conducted on the common stack for Units 01-05, the common stack for Units 06-10, and the main baghouse outlet for Unit 10.”

However, the Division will address the remainder of this concern after receiving a request for an alternate method of determining continuous compliance to the final permit.

- Testing Requirements, 3.c (p. 3)—Revise to read: “The permittee shall determine the opacity of emissions from the stack by EPA Reference Method 9 *for determination of compliance with the opacity standard* upon request by the Division.

Division's response: Comment acknowledged, changes made.

- Specific Monitoring Requirements, 4.b (p. 3)—Add the following sentence: “*This condition may be satisfied by maintaining records of vendor analyses.*”

Division's response: Comment acknowledged, fuel supplier certification records that complies with specifications of the regulation may be used.

- Specific Monitoring Requirements, 4.c (p. 3)—Revise the second sentence to read: “Records of vendor analyses of heating value and ash content must be maintained, or the heating value and ash content shall be determined”

Division’s response: Comment acknowledged, the permittee may use the certification from the fuel supplier to satisfy this requirement.

- Specific Monitoring Requirements, 4.d (p. 3)—Add the following language at the end of Condition 4.d: “The permittee may propose an alternate method for periodic monitoring of compliance with the particulate standard. If approved by the Division, the alternate method will be developed during and employed after the initial performance test required pursuant to Condition 3.a.”

Division’s response: Comment acknowledged. The Division will address this concern after receiving a request for a modification to the final permit.

- Specific Monitoring Requirements, 4.e (p. 3)—Revise the third sentence as follows: “~~If any visible emissions are seen, then~~ Opacity must *then* be determined using Reference Method 9, or by accepting the concurrent readout from the COM ~~and perform an inspection of the control equipment and make any necessary repairs.~~” Delete the last sentence.

Division’s response: Comment acknowledged, the Division will address this concern after receiving a request for a modification to the final permit.

- Specific Record Keeping Requirements, 5.b (p. 4)—Delete “... on a three-hour rolling average basis,” because a 3-hour rolling average is not used to determine compliance for these units. Replace “indicator range” with “opacity standard.” This is consistent with Condition 6.b.

Division’s response: Comment acknowledged, the Division will address the remainder of this concern after receiving a request for an alternate method for periodic monitoring to the final permit.

- Specific Reporting Requirements, 6.a.1 (p. 5)—Revise the second sentence: “The averaging period used for data reporting should correspond to the emission standard averaging period ~~which is a twenty-four (24) hour averaging period.~~” Opacity is not a 24-hour standard, and the bases are listed in the emission limitations section.

Division’s response: Comment acknowledged. The Division will address this concern after receiving a request for a modification to the final permit.

Emission Unit 10

1. Description (p. 7)

- Secondary fuels in addition to No. 2 fuel oil include used oil with less than 50 ppm PCBs, nonhazardous solvents, and oil-contaminated materials/rags, as submitted on form DEP7007A in the permit application.

Division’s response: Comment acknowledged, changes made.

- Maximum continuous rating should be changed to 1,800 MMBtu/hr, as submitted on form DEP7007A in the permit application.

Division’s response: Comment acknowledged, changes made.

2. Applicable Regulations

- Emission Limitations, 2.c (p. 7)—Revise to read: “Pursuant to 401 KAR 59:016, Section 3 (2), and 401 KAR 50:055, emissions shall not exceed twenty (20) percent opacity based on a 6-minute average, *except: (1) a maximum of twenty-seven (27) percent opacity shall be permissible for not more than one (1) 6-minute period per hour; and (2) during periods of malfunction, shutdown and startup.*

Division’s response: Comment acknowledged, 401KAR 50:055 is a compliance requirement and cannot be used under specific opacity requirements. Other changes made.

- Emission Limitations, 2.d (p.7)—Revise to read: “... based on a thirty (30) day rolling average *(as determined for 30 successive boiler operating days).*

Division’s response: Comment acknowledged, but wording not to be changed.

- Emission Limitations, 2.f (p. 8)—Add “... *on an annual-average basis*” to the end of the sentence.

Division’s response: Comment acknowledged, however no changes made.

- Testing Requirements, 3.a (p. 8)—Delete the last sentence of Condition 3.a. TVA will propose an alternate method of determining continuous compliance.

Division’s response: Comment acknowledged. The Division will address this concern after receiving a request for a modification to the final permit.

- Testing Requirements, 3.c (p. 8)—Revise to read: “The permittee shall determine the opacity of emissions from the stack by EPA Reference Method 9 *for determination of compliance with the opacity standard* upon request by the Division.

Division’s response: Comment acknowledged, changes made.

- Specific Monitoring Requirements, 4.a (p. 9)—Delete the second sentence: “The average opacity level, determined pursuant to” Add the following language at the end of Condition 4.a: “*The permittee may propose an alternate method for periodic monitoring of compliance with the particulate standard. If approved by the Division, the alternate method will be developed during and employed after the initial performance test required pursuant to Condition 3.a.*”

Division’s response: Comment acknowledged. The Division will address this concern after receiving a request for a modification to the final permit.

- Specific Monitoring Requirements, 4.b (p.9)—Revise the third sentence as follows: “~~If any visible emissions are seen, then~~ Opacity must *then* be determined using Reference Method 9, or by accepting the concurrent readout from the COM ~~and perform an inspection of the control equipment and make any necessary repairs.~~” Delete the last sentence.

Division’s response: Comment acknowledged, the Division will address this concern after receiving a request for a modification to the final permit.

- Specific Monitoring Requirements, 4.c (p.9)—Compliance with the SO₂ emission limitation and the percent reduction requirement is determined on the basis of a rolling average of SO₂ emissions and inlet coal sulfur values over a period of 30 boiler operating days. Revise the second sentence: “... if any ~~24-hour average sulfur dioxide~~ *30-day rolling average emission or percent reduction* value exceeds the standard”

Division’s response: Comment acknowledged, changes made.

- Specific Monitoring Requirements, General—No condition was included to require CEMs for NO_x emissions. See 401 KAR 59:016, Section 7(3).

Division's response: Comment acknowledged, changes made.

- Specific Record Keeping Requirements, 5.c (p.11)—Delete "... on a three-hour rolling average basis," because a 3-hour rolling average is not used to determine compliance for these units. Replace "indicator range" with "*opacity standard*."

Division's response: Comment acknowledged, the Division will address the remainder of this concern after receiving a request for an alternate method for periodic monitoring to the final permit.

- Specific Reporting Requirements, 6.b (p. 13)—Replace "indicator range" with "*opacity standard*."

Division's response: Comment acknowledged, the Division will address the remainder of this concern after receiving a request for an alternate method for periodic monitoring to the final permit.

Emission Unit 11

1. Description (p. 14)—Units were constructed in 1953.

Division's response: Comment acknowledged, changes made.

2. Applicable Regulations, Condition 3 (p. 14)—Daily Method 9 testing should not be required for units firing only no. 2 oil. Revise the condition to read: "*When the unit is in operation, the permittee shall perform a qualitative visual observation of the opacity from the stack once per day and maintain a log of the observations. If visible emissions are seen, the permittee shall log that in the record, determine the opacity of emissions by Reference Method 9 (weather permitting), and instigate an inspection of the units for any necessary repairs.*"

Division's response: Comment acknowledged, changes made.

Emission Unit 12

Applicable Regulations, Condition 7.a (p. 19)—Revise to read: "The enclosures and bagfilters shall be *operated and maintained as necessary* to maintain compliance...."

Division's response: Comment acknowledged, changes made.

Emission Unit 13

This section requires significant revision. Portions of the coal handling system have been built or upgraded since the Title V application was deemed complete. The system is currently permitted as Emission Units 45 and 46 in air permit no. S-98-033 and Emission Units 47 and 48 in air permit no. S-00-042. Emission Unit 13 should be deleted and replaced with the language below for Emission Units 13A and 13B, which consolidates information and requirements from permits S-98-033 and S-00-042.

Begin Replacement Language for Emission Unit 13:

SECTION B – EMISSION POINTS, EMISSIONS UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

Emissions Unit 13A (4, 32, 33, 39, 40, 41, 42, 43, & 44) – Coal Handling

Description:

Equipment includes: Screening and Crushing Building & Facilities; Rotary and/or Bottom Dump to Hopper at Railcar Unloader; Hopper Discharge to Conveyor BC-1; Discharge from Conveyor BC-3 and BC-4 to Conveyor BC-6, BC-7, or BC-13; Discharge from Trippers 1&2 to Bunkers; Discharge from Conveyor BC-5 to Yard Conveyor or Auxiliary Stockout Conveyor; Discharge from Yard Conveyor to Elevating Conveyor; Discharge from Elevating Conveyor to Boom Conveyor; Discharge from Boom Conveyor to Coal Storage Yard

Controls: Enclosures and Foam Suppression Carryover

Maximum Operating Rates:

1. Screening and Crushing Building, 2500 tons per hour
2. Rotary and/or Bottom Dump to Hopper at Railcar Unloader, 2500 tons per hour
3. Hopper Discharge to Conveyor BC-1, 2500 tons per hour
4. Discharge from Conveyor BC-5 to Yard Conveyor (BC-25) or Auxiliary Stockout Conveyor, 2500 tons per hour

Construction commenced: 2000

- 5(a). Discharge from Yard Conveyor (BC-25) to Elevating Conveyor [Stock-out], 2500 tons per hour
- 5(b). Discharge from Elevating Conveyor to Boom Conveyor [Stock-out], 2500 tons per hour
- 5(c). Discharge from Boom Conveyor to Coal Storage Yard [Stock-out], 2500 tons per hour

Construction commenced: 1989

6. Discharge from Conveyor BC-3 and BC-4 to Conveyor BC-6, BC-7, or BC-13, 2400 tons per hour
7. Discharge from Trippers 1&2 to Bunkers, 2400 tons per hour
- 8(a). Bucket Wheel Discharge to Boom Conveyor [Reclaim], 2500 tons per hour
- 8(b). Boom Conveyor Discharge to Yard Conveyor (BC-25) [Reclaim], 2500 tons per hour
- 8(c). Discharge from Yard Conveyor (BC-25) to Surge Bin [Reclaim], 2500 tons per hour

Construction commenced: 1998

V-03-054

Page 9

Applicable Regulations:

Regulation 401 KAR 60:250, Standards of performance for coal preparation plants,

incorporating by reference 40 CFR 60 Subpart Y for emissions units commenced after October 24, 1974.

1. Operating Limitations:

None.

2. Emission Limitations:

Pursuant to Regulation 401 KAR 60:250, 40 CFR 60.252, the owner or operator subject to the provisions of this regulation shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or transfer and loading system processing coal, gases that exhibit 20 percent opacity or greater.

3. Testing Requirements:

Pursuant to Regulation 401 KAR 60:250, 40 CFR 60.254, EPA Reference Method 9 and the procedures in 40 CFR 60.11(b) shall be used to determine opacity at least annually, or more frequently if requested by the Division.

4. Specific Monitoring Requirements:

The permittee shall perform a qualitative visual observation of the opacity of emissions from each emissions unit on a weekly basis and maintain a log of the observations. If visible emissions are seen, the permittee shall determine the opacity of emissions by Reference Method 9 and instigate an inspection of the control equipment, making any necessary repairs.

5. Specific Record Keeping Requirements:

Records of the coal and pet coke received and processed shall be maintained.

6. Specific Reporting Requirements:

See Section F.

7. Specific Control Equipment Operating Conditions:

- a) The enclosures and foam suppression carryover shall be used/operated as necessary to maintain compliance with permitted emission limitations, in accordance with manufacturer's specifications and/or standard operating practices.
- b) Records regarding the maintenance of the control equipment shall be maintained.
- c) See Section E for further requirements.

Description:

Equipment includes: Coal Storage Yard

Construction commenced: 1998

Maximum Operating Rate: 2500 tons per hour

Applicable Requirements:

- a) Pursuant to Regulation 401 KAR 63:010, Section 3, reasonable precaution shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:
 - 1. Application and maintenance of asphalt, application of water, foam or suitable chemicals on roads, material stockpiles, and other surfaces that can create airborne dusts;
 - 2. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.
- b) Pursuant to Regulation 401 KAR 63:010, Section 3, discharge of visible fugitive dust emission beyond the property line is prohibited.

1. Operating Limitations:

None

2. Emission Limitations:

None

3. Testing Requirements:

None

4. Specific Monitoring Requirements:

The permittee shall monitor the amount of coal received.

5. Specific Record Keeping Requirements:

Records of the amount of coal received shall be maintained.

V-03-054

Page 11

6. Specific Reporting Requirements:

See Section F.

7. Specific Control Equipment Operating Conditions:

None

Division's response: Comment acknowledged, changes made.

Emission Unit 14

1. Description (p. 20)—Revise the control description: “Bagfilter/foam *carryover*.”
2. Applicable Regulations, Condition 3.a (p. 20)—Method 9 testing should be required annually, not monthly. Period monitoring is covered under Condition 4, which requires weekly observations and Method 9 testing as necessary. The reference to 40 CFR 60.11 should be changed to “40 CFR 60.11(b).”

Division's response: Comment acknowledged, the Division considers the monthly as a qualitative avenue to assess opacity for this unit. 40 CFR 60.11 is a standard applicable referent for opacity. The reference to 40 CFR 60.11(b) addresses opacity specific standard which is part of the opacity referent. Therefore, the reference will not change.

Emission Unit 15

Applicable Regulations, Condition 3 (p. 22)— The reference to 40 CFR 60.11 should be changed to “40 CFR 60.11(b).”

Division's response: Comment acknowledged, , the Division considers the monthly as a qualitative avenue to assess opacity for this unit. 40 CFR 60.11 is a standard applicable referent for opacity. The reference to 40 CFR 60.11(b) addresses opacity specific standard which is part of the opacity referent. Therefore, the reference will not change.

Emission Unit 16

1. Description (p. 24)
 - Maximum operating rate for no. 8: Change “AFBC SBM disposal” to “*AFBC disposal silo*.”
 - Maximum operating rate for no. 9: Delete the word “silo” from the end of the description.
 - Maximum operating rate for no. 10: Revise rate to 200 tons/hr.

Division's response: Comment acknowledged, changes made.

V-03-054

Page 12

2. Applicable Regulations
 - Emission Limitations, 2.a (p.25)—Revise the first sentence to read “... particulate matter emissions into the open air *from a control device or stack* shall not exceed” according to the language in the cited regulation.

- Emission Limitations, 2.b (p. 25)—Insert the word “*continuous*” before the phrase “visible emissions,” consistent with the cited regulation.
- Specific Control Equipment Operating Conditions, 7.a (p. 25)— Revise to read “The baghouses shall be *operated and maintained as necessary* to maintain compliance .. .”

Division’s response: Comment acknowledged, changes made.

Emission Unit 17

Applicable Regulations, Condition 7.a (p. 27)—Revise to read: “The water spray suppression system and compaction shall be *operated and maintained as necessary* to ensure the emission units maintain compliance”

Division’s response: Comment acknowledged, changes made.

SECTION C

Coal Handling

- Delete activities 7, 8, 9, 12, 13, 14, and 19. These emission points were upgraded and are now subject to NSPS. They have been moved to SECTION B.
- Revise Activity 11 capacity from 1,400 tph to 2,500 tph.
- Revise Activities 17 and 18 capacities from 700 tph to 1,400 tph.

Division’s response: Comment acknowledged, changes made.

Outside Buildings and Tanks

7. ~~Powerline 2114~~ Dust Suppressant Chemical tank – 3,000 gal
8. ~~Powerline 2114~~ Dust Suppressant Chemical tank – 4,000 gal
9. ~~Powerline 2114~~ Dust Suppressant Chemical tank – 500 gal

Division’s response: Comment acknowledged, changes made.